Georgia Department of Natural Resources

2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-9000
Lonice C. Barrett, Commissioner
Carol A. Couch Ph.D., Director
Environmental Protection Division
404/656-4713

February 6, 2004

Mr. James I. Palmer, Jr.
Regional Administrator
U.S. EPA, Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303-3104

Re: Letter Concerning Designation of 8-hour Ozone Nonattainment Areas
Dated December 3, 2003

Dear Mr. Palmer:

We are in receipt of your letter dated December 3, 2003, in which EPA states its intention to modify the State of Georgia's recommendations for 8-hour ozone standard nonattainment area designations. EPA stated that, in addition to the counties recommended by Georgia, they intend to designate Catoosa, Houston, Monroe, and Walker counties as well. EPA stated that they would consider whether any additional information submitted by the State by February 6, 2004, justifies a different conclusion. We appreciate the opportunity to demonstrate why EPA's modifications of our recommendations are not appropriate.

In general, we are disappointed and confused with EPA's response to our initial nonattainment recommendations. Georgia worked closely with EPA to develop and understand the 11 factors we would all use to evaluate areas for nonattainment boundary designations. We developed a detailed approach to evaluating all of the data, working closely with state and local government planning agencies, and holding a number of public meetings to fully involve the public in the development of our recommendations. Because we closely consulted with EPA during this process, it is surprising that EPA did not agree with our recommendations and chose not to use or ignore agreed upon criteria.

We understand that EPA does have the responsibility of oversight of their rules, but we urge EPA to consider the impact of their proposed actions, and to allow states to develop the best local solutions to achieve national air quality goals. It is appropriate for EPA to set environment standards and guidance, but EPA should defer as much as possible to the states to implement those standards. EPA has not done that with these recommendations.

Attached, please find additional information in support of EPD's initial July 15, 2003, nonattainment area recommendations, including background information followed by detailed discussion regarding each of the counties in question.

Thank you for allowing us this opportunity to address the issues you raised in the above-referenced letter. We plan to continue to work closely with EPA during this final analysis of our recommendations. If there is additional information or clarification that you need, please let us know.

Sincerely,

Carol A. Couch, Ph.D.
Director, Environmental Protection Division

cc: Senator Seth Harp, District 16
Senator Jeff Mullis, District 53
Senator Preston Smith, District 52
Senator Ross Tolleson, District 18

Representative Ronald Forster, District 3
Representative Curtis Jenkins, District 93
Representative Brian Joyce, District 2
Representative Larry O'Neal, District 117
Representative Mike Snow, District 1
Representative Jack White, District 3

Commissioner Bebe Heiskell, Walker County
Commissioner Winford Long, Catoosa County
Commissioner Tommy Olmstead, Bibb County
Commissioner Ned Sanders, Houston County
Commissioner Ben Spear, Monroe County

Mr. Jack Byrd, Catoosa County Commission
Mr. J. Olney Meadows, Catoosa County
Mr. Ron Carbon, 21st Century Partnership
Ms. Gail King, Monroe County Commission

Mr. Barry Stephens, Tennessee Division of Air Pollution Control
Mr. Bob Colby, Chattanooga-Hamilton County Air Pollution Control Bureau

GEORGIA'S 8-HOUR OZONE NONATTAINMENT AREA RECOMMENDATIONS
- ADDITIONAL INFORMATION ON FACTORS, SELECTION CRITERIA AND MODELING RESULTS

BACKGROUND

Section 107(d)(1) of the Clean Air Act (CAA) requires an area to be designated nonattainment if it does not meet the standard or contributes to ambient air quality in a nearby area that does not meet the standard. For counties which do not have a monitor reporting a violation or which do not have a monitor altogether, inclusion in the nonattainment area hinges upon how contribution is determined.

Georgia's determination of contribution was based on the criteria laid out in EPA's March 28, 2000 memo, "Boundary Guidance on Air Quality Designations for the 8-Hour Ozone National Ambient Air Quality Standards (NAAQS or Standard)". EPA recommended that the CMSA serve as the presumptive boundary for 8-hour NAAQS nonattainment areas; but did not preclude the area from being smaller or larger. The guidance specifically lists the eleven factors that a State should consider in determining whether to recommend area boundaries that are smaller than a CMSA. The criteria set forth in EPA guidelines consist of a variety of factors – stationary as well as mobile emissions, VOC as well as NOx emissions, and air quality modeling.

Georgia consolidated local county data corresponding to the above-referenced factors into four criteria – population density, NOx or VOC emissions density, commute trips and VMT. In the consideration of these criteria, thresholds were developed by the State of Georgia that indicated significance of the criteria. All criteria are expressed in terms of measurable quantities. Low-levels of that quantity would indicate an insignificant influence in that area. Counties that had two or more criteria exceeding these thresholds were candidates for inclusion in the nonattainment area, and then were further reviewed with local or regional air quality modeling which considered the impacts of regional emissions reductions (11^{th} factor) from the Regional NOx SIP Call, metro-Atlanta 1-hour ozone attainment plan, and other state and federal rules being implemented. In this way, Georgia ensured that all 11 factors were evaluated in an integrated manner. The following information highlights additional analysis of those factors.

CHATTANOOGA (TN) 8-HOUR OZONE NONATTAINMENT AREA

There are no ozone monitors in Catoosa or Walker Counties indicating high levels of ozone. EPA is basing its recommendations on population and other factors. The nearest ozone monitors are in Tennessee.

There are three ozone monitors in the Chattanooga area (two in Hamilton county and one in Meigs county). All three have shown significant reductions in ozone levels in recent years. Observed ozone concentrations have decreased from 0.097 parts per million (ppm) in 2000 to 0.087-0.088 ppm in 2003.

CATOOSA COUNTY

The EPA included Catoosa County in the Chattanooga nonattainment area for the following reasons: (1) It is a Chattanooga CMSA county; (2) Catoosa County has a relatively high population (53,282) in the year 2000 and is experiencing a high population growth rate (13,408 people or 25 percent) from 2000 to 2010; (3) Catoosa County also has a high percentage (80 percent) of commuters traveling into the core CMSA counties; and (4) Catoosa County exceeded two of the criteria for inclusion in a nonattainment area as set forth by the State. Catoosa County exceeded the State's criteria of population density (384 people per square mile) in 2007, NOx emissions density (16 tons per year/square mile) in 2007, and VOC emissions density (18 tons per year/square mile) in 2007.

MODELING ANALYSIS

Regional emissions reductions from the Regional NOx SIP Call, metro-Atlanta 1-hour ozone attainment plan, and other state and federal rules currently being implemented will have a significant, near-term impact on the Chattanooga area, as well as other parts of the Southeast. Regional emissions reductions is the 11th factor in the Boundary Guidance document and is an important factor, as the impacts of these reductions are starting to be seen in ozone monitors and can be further predicted with additional air quality modeling.

Two independent and different modeling simulations indicate that the Chattanooga, Tennessee area can achieve the ozone standard with little or no additional controls in Catoosa County. Air quality modeling performed for the Chattanooga area as part of the Arkansas-Tennessee-Mississippi Ozone Study (ATMOS) predicts a maximum 2007 Design Value of 0.086 ppm. Furthermore, Georgia EPD's air quality modeling simulations, conducted with input from Georgia Tech's Fall-line Air Quality Study (FAQS) for the Chattanooga area, predicts even lower design values, in the range from 0.080 to 0.081 ppm as compared to the values predicted by ATMOS. Please see the attached "Air Quality Modeling for Chattanooga (TN) Area" for further details.

Other EPA modeling studies have also come to the same conclusion. The Clear Skies Modeling indicates that Chattanooga would be in attainment of the 8-Hour Ozone Standard by 2010 with a predicted design value of 0.075 ppm with or without the passage of the Clear Skies Initiative implying no need for additional controls.

LOCAL CONTROL MEASURES

Catoosa County has signed a letter of support for Chattanooga's Early Action Compact (EAC). Catoosa County is actively involved in the EAC and by doing so is committed to taking additional actions to ensure that the ozone standard is met. By definition, this involvement ensures that appropriate air pollution sources in Catoosa will be considered and implemented in the overall plan. If for some reason the temporary relief from nonattainment area requirements provided to EAC participants is found invalid by legal challenges, the county would assume unnecessarily the burdens of new source review of its stationary sources, a mobile source emissions budget, and participation in regional transportation planning.

WALKER COUNTY

EPA stated in its letter that it intends to include Walker County in the Chattanooga nonattainment area only because it is within the Chattanooga MSA and it is participating in the Chattanooga EAC.

From discussions with EPA, we understand that EPA acknowledges that Walker County should not be designated based only on the technical data detailed in the 11 factors. We agree with this assessment. None of the four criteria thresholds that we used were exceeded. Emissions of both NOx and VOC are low compared with surrounding counties; population growth is low; there are few industrial point sources; and commuting levels and commute patterns into the Chattanooga core are not significant. However, Walker County signed a letter of support for Chattanooga's EAC. This Early Action Compact is intended to provide cleaner air sooner, with delayed nonattainment requirements for those counties that are designated. It's an excellent example of an innovative EPA approach to addressing local air quality issues.

Walker County was concerned that if they participated in the EAC they would end up designated nonattainment. Based on discussions with EPA, we assured them that this was not the case, and that any actions to designate them as nonattainment would be based purely on the technical analysis. Now, even though the technical analysis indicates otherwise, EPA is recommending them to be designated nonattainment just because they voluntarily agreed to help their neighboring counties in Tennessee solve the greater Chattanooga ozone problem.

This sends a bad message to local governments and businesses about how Georgia and EPA are working together. It also sets a bad precedent for how we deal with future areas, and could have a chilling effect on any future volunteer efforts that EPA may try to implement.

Participation in an EAC is not a factor detailed in the Boundary Guidance nor is it an indicator or admission of contribution. The Clean Air Act requires an area to be designated nonattainment if it does not meet the standard or if it contributes to ambient air quality in a nearby area that does not meet the standard. Walker County does not have monitored violations of the ozone standard nor does it exceed the thresholds established by Georgia for any of the criteria set forth by EPA in its guidance. Therefore, Walker County is not a significant contributor to the Chattanooga nonattainment area problem and should not be designated as a nonattainment county.

MODELING ANALYSIS

The modeling analysis performed for Catoosa County holds for Walker County as well. Please refer to the attached "Air Quality Modeling for Chattanooga (TN) Area" for further details.

LOCAL CONTROL MEASURES

Walker County, like Catoosa County, is actively involved in Chattanooga's (EAC), and is committed to taking additional actions to ensure that the ozone standard is met. By definition, this involvement ensures that appropriate air pollution sources in Walker will be considered in the overall plan. If for some reason the temporary relief from nonattainment area requirements provided to EAC participants is found invalid by legal challenges, the county will assume unnecessarily the burdens of new source review of its stationary sources, a mobile source emissions budget, and participation in regional transportation planning.

SUMMARY

While EPA indicated that the State did not provide a compelling argument based on the 11 factors to exclude Catoosa County, we believe that the additional modeling analysis, consideration of the local EAC commitment to contributing to attainment, and other information above should provide EPA with sufficient evidence to concur with our original recommendation.

For Walker County, EPA should reconsider the additional air quality modeling performed for the Chattanooga area, the issue of whether or not participation in an EAC should mandate inclusion in a nonattainment area, the local EAC commitment to contributing to attainment, and the other information above. This reconsideration should provide EPA with sufficient information to concur with our original recommendation.

One of the 11 factors, jurisdictional boundaries, is very important for this area. Designating Catoosa and/or Walker counties with the Chattanooga nonattainment area would set up a much more complicated planning and implementation process involving different state and local environmental and transportation agencies. This is especially pertinent for transportation conformity planning. Considering all of the additional technical analysis above and previously submitted, EPA should strongly consider this factor in its final action. Absent very compelling data or information indicating that such a large two-state nonattainment area is necessary to attain the standard, EPA should concur with the initial nonattainment recommendations submitted by EPD.

MACON (GA) 8-HOUR OZONE NONATTAINMENT AREA

There are no ozone monitors in Houston or Monroe counties indicating high levels of ozone. EPA is basing its recommendation on population and other factors. The nearest ozone monitor is in Macon (Bibb County) and is indicating a downward trend towards attainment. Observed ozone concentrations have decreased from 0.105 ppm in 2000 to 0.086 ppm in 2003.

HOUSTON COUNTY

The EPA included Houston County in the Macon nonattainment area because of its alleged similarities to Bibb County, and for the following other reasons: (1) It is part of the Macon CMSA; (2) It has a relatively high population (110,765) in the year 2000 and a projected population growth rate (17 percent) from 2000 to 2010; and (3) The State review indicated three of the four criteria exceeded our threshold for review. Houston County exceeded the State's criteria of population density (336 people per square mile) in 2007, NOx and VOC emissions densities (21 and 14 tons per year/square mile, respectively) in 2007, and 2001 summer daily vehicle miles traveled (2,510,758 miles per day).

Since EPA's recommendation states that Houston is similar to Bibb, EPA should reconsider the county data. While Houston is the county second in size and other factors to Bibb in the area, the data used to analyze the 11 factors are very different:

Criterion	Bibb	Houston
Criterion 1, Population density (persons/square mile)	620	336
Criterion 2, Emissions Density (tons/year/square mile)		
Nitrogen oxides (NOx)	40	21
Volatile organic compounds (VOC)	36	14
Criterion 3, In-commutes (persons)		
To core counties	57,828	48,524
To monitored counties	54,125	8,570
Criterion 4, Vehicle miles traveled (miles/day)		
With Interstates	5,425,575	3,457,857
Without Interstates	3,372,884	2,510,757

Furthermore, analysis of wind patterns does not indicate an overwhelming impact from Houston County compared to other directions.

MODELING ANALYSIS

Regional emissions reductions from the Regional NOx SIP Call, metro-Atlanta 1-hour ozone attainment plan, and other state and federal rules being implemented now will have a significant impact near-term on the Macon area, as well as other parts of the Southeast. Regional emissions reductions is the 11th factor in the Boundary Guidance document and is an important factor, as the impacts of these reductions are starting to be seen in ozone monitors and can be further predicted with additional air quality modeling.

Georgia EPD's air quality modeling simulations, conducted with input from Georgia Tech's Fall-line Air Quality Study (FAQS) for the Macon area, predicts design values slightly over the standard, thus indicating that little or no additional local controls will be needed from either Houston or Monroe Counties to bring the Macon area in attainment in 2007. The 2003 Design Value is already at 0.086 ppm, four years before the model predicts the same design value for 2007, and emissions are estimated to decrease between 2003 and 2007.

Other EPA modeling studies have come to the same conclusion. The NOx SIP Call modeling shows Macon to be in attainment of the 8-Hour Ozone Standard by 2007, and the Clear Skies Modeling indicates that Macon would be in attainment of the 8-Hour Ozone Standard by 2010 with a predicted design value of 0.069 ppm even without the passage of the Clear Skies Initiative implying no need for additional controls.

Please see the attached "Air Quality Modeling for Macon (GA) Area" for further details.

LOCAL CONTROL MEASURES

The Macon area was not eligible for an EAC process. Despite this, the State and the local governments have been pro-actively involved in ozone air quality planning for several years through the Fall-Line Air Quality Study (FAQS). The near-completion of this technical analysis has provided the State and local governments with the information needed to achieve what the EACs were designed for – to achieve cleaner air sooner.

The FAQS work has produced more than just projection modeling. A key element has been the development of possible control measures that can be implemented in the area to reduce ozone concentrations. Since EPA's December 3, 2003 letter, and in anticipation of the scheduled April final designation action, local interest and involvement in this process has increased. Local governmental agencies in the area have worked with EPD and Georgia Tech to research, further refine, and quantify the list of possible control options. Work is underway that will allow us to move from this study and planning process to implementation, based on the final modeling and analysis EPD is planning later this year. In order to make this happen, a Middle Georgia Clean Air Coalition has been formed, which will help organize these efforts. See the summary for a further discussion of this group.

While attainment plans will likely not be required for several years after nonattainment designation, we expect that we will be able to utilize the FAQS work and the demonstrated local governmental commitment to develop an earlier attainment plan, ready to submit to EPA for review sometime in 2005.

Houston County has been actively involved in the FAQS, and is committed to taking additional actions to ensure that the ozone standard is met. This involvement ensures that appropriate air pollution sources in Houston County will be considered in the overall plan. Nonattainment designation now will unnecessarily subject the county to the burdens of new source review of its stationary sources, a mobile source emissions budget, and participation in regional transportation planning.

MONROE COUNTY

The EPA acknowledges that Monroe County is outside the presumptive boundary of the Macon CMSA, and does not provide data to indicate that several of the EPD's criteria exceeded the thresholds for further review. We agree with that assessment. Other than the high NOx emissions density caused by a single facility (a Georgia Power plant), none of the four criteria thresholds we used were exceeded. Other NOx and VOC emissions are low compared to surrounding counties; population growth is low; there are few industrial point sources; commuting patterns and levels into the core area are low; and total vehicle miles traveled are low. The EPA's only stated reason for including Monroe County was due to the large nitrogen oxide emissions from Georgia Power Plant Scherer. We understand from EPA's response that this was the only reason Monroe County was recommended for inclusion, and EPA would not now recommend that if this plant were not located in Monroe County.

MODELING ANALYSIS

The modeling analysis performed for Houston County holds for Monroe County as well. Please refer to the attached "Air Quality Modeling for Macon (GA) Area" for further details.

LOCAL CONTROL MEASURES

Monroe County has been actively involved in the FAQS, and, like Houston County, is committed to taking additional actions to ensure that the ozone standard is met. This involvement ensures that appropriate air pollution sources in Monroe County will be considered in the overall plan. Nonattainment designation now will unnecessarily subject the county to the burdens of new source review of its stationary sources, a mobile source emissions budget, and participation in regional transportation planning.

In addition to this, air emissions in Monroe County have already been regulated as part of the metro-Atlanta one-hour ozone attainment plan since 1999, including such measures as low-sulfur gasoline, open burning restrictions, nitrogen oxide controls of small boilers and generators, stricter permitting of new power generation facilities, and more.

Further reductions in NOx from Plant Scherer are also being achieved. In anticipation of the NOx SIP Call, Georgia Power converted two of the four units at Plant Scherer to Powder River Basin (PRB) coal in April 2003 and will convert the remaining two units to PRB coal prior to the 2004 ozone season. This fuel conversion will result in an estimated NOx reduction of 28 tons per day, which has not yet been included in the FAQS air quality modeling simulations performed by Georgia Tech.

SUMMARY

While EPA indicated that the State did not provide a compelling argument based on the 11 factors to exclude Houston County, we believe that the additional modeling analysis, consideration of the local Middle Georgia Clean Air Coalition commitment to contributing to attainment, the State's intent to submit an early Macon attainment plan, and the additional information above should provide EPA with sufficient evidence to concur with our original recommendation.

For Monroe, County, while EPA indicated that the State did not provide a compelling argument based on the 11 factors to exclude the county, we believe that the additional modeling analysis, the existing metro-Atlanta control measures, consideration of the Middle Georgia Clean Air Coalition commitment to contributing to attainment, the State's intent to submit an early attainment plan, and other information above should provide EPA with sufficient evidence to concur with our original recommendation. EPA should reconsider the impact a nonattainment designation will have on this county, since the only stated reason for recommending it is the location of the Georgia Power plant.

As mentioned above, the elected officials of the region have formed the Middle Georgia Clean Air Coalition (MGCAC). The MGCAC is actively pursuing development and analysis of possible emission reduction measures equivalent to those normally seen in an Early Action Compact. They are currently developing and evaluating proactive strategies that range from alternative fuel vehicles to local ordinances (e.g. open-burning bans, anti-idling, ozone action days). The local governmental leaders have already publicly committed to supporting the efforts of the MGCAC.

OVERALL FINAL RECOMMENDATIONS

We understand that EPA's recommendations did not place as much weight on the regional air quality modeling as we did. While we understand that this modeling predicts future air quality and does not reflect present air quality, we believe that EPA should consider such modeling. Not only is it one of the 11 factors EPA advised states to consider, it does indicate what really will be required to meet the ozone standard in an area. Georgia has not waited for these designations to start our air quality planning process. We and other planning partners have

invested significant resources to do the necessary proactive modeling and other technical analysis to hopefully achieve clean air goals sooner.

While our mutual overall goal is to achieve these public health-based air quality standards, we should also strongly consider the most cost-effective measures needed to accomplish this. Our analyses indicate that we can achieve both with our initial boundary recommendations.

While it is not one of the 11 factors to consider, Georgia, unlike some other states, has statutory authority to control emissions in attainment counties to help solve problems in core nonattainment areas. We used this approach effectively with metro-Atlanta. Strict rules have been adopted in 32 counties surrounding the 13-county Atlanta ozone nonattainment area. We can use this same approach for the Chattanooga and Macon areas, and EPA should consider this. Nonattainment designations for Catoosa, Houston, Monroe, or Walker Counties are not really required to solve the problem.

AIR QUALITY MODELING FOR CHATTANOOGA (TN) AREA

Air Quality Modeling was performed in the Chattanooga area using two different modeling systems. The performance of both modeling simulations meets EPA acceptable requirements for nonattainment area State Implementation Plans.

The ATMOS study used UAM-V to simulate air quality over the Tennessee Valley and surrounding areas during two air pollution episodes (August 29-September 9, 1999 and June 16-22, 2001). The Chattanooga area (including Walker and Catoosa counties) is covered under a 4-km grid resolution. The details on the ATMOS modeling can be obtained from the modeling contacts at the respective states as well as from the website: http://atmos.saintl.com/. The modeling predicts a maximum 2007 Design Value of 0.086 ppm in the Chattanooga area. While slightly over the 8-hour ozone standard, the results indicate that little or no additional local controls will be needed from either Walker or Catoosa Counties to bring the Chattanooga area in attainment in 2007.

With input from Georgia Tech's Fall-Line Air Quality Study (FAQS), Georgia EPD has conducted its own atmospheric modeling using the PSU/NCAR Mesoscale Meteorological Model (MM5), Sparse Matrix Operator Kernel Emissions (SMOKE) and Models-3 air quality modeling system. A regional air pollution episode (August 12-20, 2000) was simulated. A nested grid modeling domain with three grids at 36, 12 and 4-km resolution was used. The Chattanooga area (including Walker and Catoosa counties) was covered under the 12-km grid resolution. The following databases and models were used for developing emission inventories and episode specific emission files for air quality modeling:

- National Emissions Inventory (NEI99) and related databases for area, non-road mobile, on-road mobile and non-EGU point sources;
- County wide VMT data from Georgia Department of Transportation (GDOT) and Atlanta Regional Commission's (ARC) Travel Demand Model and MOBILE6 emission factors;
- Continuous Emissions Monitoring (CEM) Data for Electric Generating Units (EGUs);
- Census 2000 data (e.g., land use, population, etc.) for developing gridded surrogate database for spatial allocation of emissions;
- Biogenic Emissions Inventory System (BEIS3) utilizing Biogenic Emissions Land use Database (BELD3) for generating biogenic emissions;
- Economic Growth and Analysis System (EGAS4.0) for obtaining emission projection factors for future years.

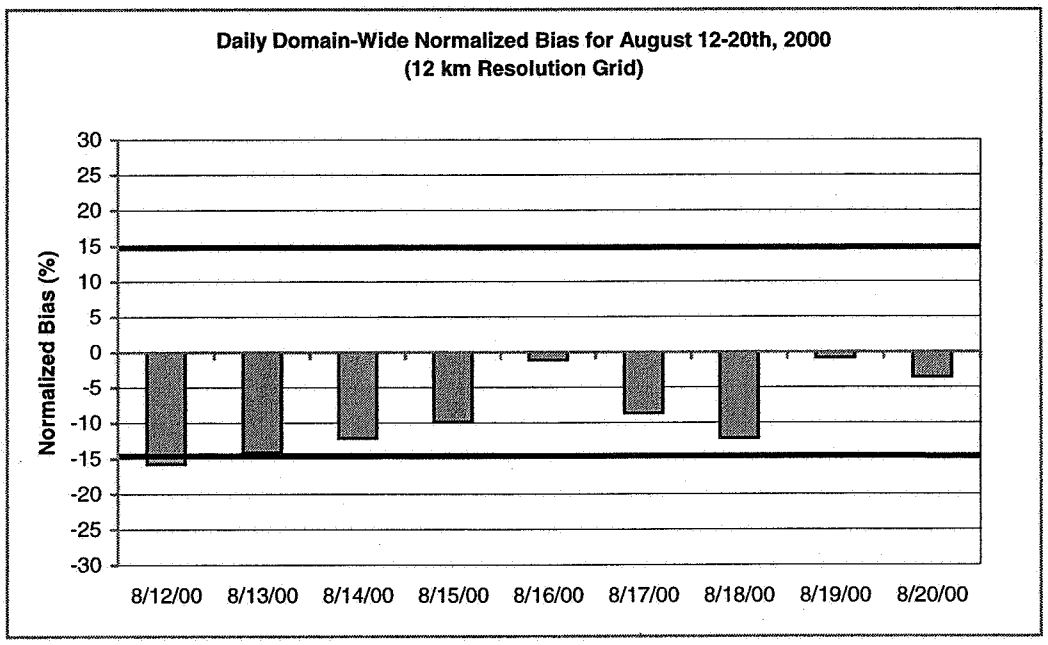
The model performance was evaluated at all available monitoring stations in the region including all three monitors in the Chattanooga area. The modeling results exceed EPA's criteria of adequate model performance and thus, can be used for evaluation and analysis of emission control strategy.

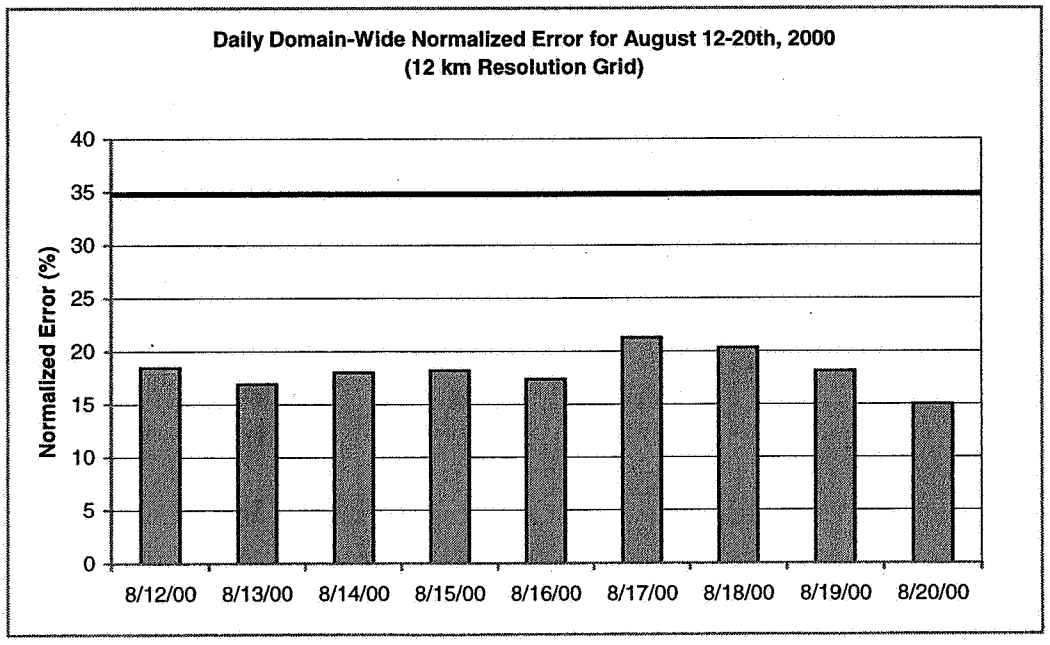
In support of Chattanooga's Early Action Compact, the future year modeling simulations were conducted for both 2007 and 2012. All Federal Controls that have been legislated to go in place have been modeled.

For purposes of evaluating air quality modeling for the Chattanooga area, EPD applied a Relative Reduction Factor (RRF) analysis pursuant to EPA modeling guidance. In this analytical approach, the daily maximum 8-hour predicted value at the Tennessee monitors for the 2007 future control scenario was divided by the daily maximum 8-hour predicted value for

2000 (using current emissions), which results in a ratio, or "relative reduction factor." In the case of the August 12–20, 2000, episode, the maximum 8-hour predicted values for the Chattanooga monitor produced by the model for 2000 and 2007 are 0.092 and 0.081 ppm, respectively. Taking the ratio of these two values produces a relative reduction factor of 0.884. When this RRF of 0.884 is multiplied by the observed 8-hour design value for 2001 (0.092 ppm), a future design value for 2007 of 0.081 ppm is obtained, which is well below the standard. A similar process yields a 2012 Design Value of 0.081 ppm. The same was done for the remaining two monitors yielding similar results.

The following figures and tables indicate the model performance and attainment status of various monitors in the Chattanooga area from EPD/FAQS modeling.





Chattanooga 8-hour Ozone Nonattainment Area
Attainment Demonstration Calculation Results
(12 km Grid Resolution)

Calculation of 2007 Future Design Value Using Relative Reduction Factor Method

	Monitor Location		
	Chattanooga	Meigs	Ridge Trail Road
2001 Observed Design Value (ppm) at Monitor	0.092	0.092	0.092
2000 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.092	0.087	0.089
2007 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.081	0.077	0.077
Relative Reduction Factor	0.884	0.876	0.869
2007 Future Design Value (ppm)	**0.081**	**0.081**	**0.080**

Calculation of 2012 Future Design Value Using Relative Reduction Factor Method

	Monitor Location		
	Chattanooga	Meigs	Ridge Trail Road
2001 Observed Design Value (ppm) at Monitor	0.092	0.092	0.092
2000 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.092	0.087	0.089
2007 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.081	0.076	0.076
Relative Reduction Factor	0.875	0.870	0.850
2012 Future Design Value (ppm)	**0.080**	**0.080**	**0.078**

AIR QUALITY MODELING FOR MACON (GA) AREA

With input from Georgia Tech's Fall-Line Air Quality Study (FAQS), Georgia EPD has conducted its own atmospheric modeling using the PSU/NCAR Mesoscale Meteorological Model (MM5), Sparse Matrix Operator Kernel Emissions (SMOKE) and Models-3 air quality modeling system. A regional air pollution episode (August 12-20, 2000) was simulated. A nested grid modeling domain with three grids at 36, 12 and 4-km resolution was used. The Macon area (including Houston and Monroe counties) was covered under the 4-km grid resolution. The following databases and models were used for developing emission inventories and episode specific emission files for air quality modeling:

- National Emissions Inventory (NEI99) and related databases for area, non-road mobile, on-road mobile and non-EGU point sources;
- County wide VMT data from Georgia Department of Transportation (GDOT) and Atlanta Regional Commission's (ARC) Travel Demand Model and MOBILE6 emission factors;
- Continuous Emissions Monitoring (CEM) Data for Electric Generating Units (EGUs);
- Census 2000 data (e.g., land use, population, etc.) for developing gridded surrogate database for spatial allocation of emissions;
- Biogenic Emissions Inventory System (BEIS3) utilizing Biogenic Emissions Land use Database (BELD3) was used for generating biogenic emissions;
- Economic Growth and Analysis System (EGAS4.0) for obtaining emission projection factors for future years.

The model performance was evaluated at all available monitoring stations in the region. The modeling results exceed EPA's criteria of adequate model performance and thus, can be used for evaluation and analysis of emission control strategy.

Future year modeling simulations were conducted for both 2007 and 2012. All Federal Controls that have been legislated to go in place have been modeled.

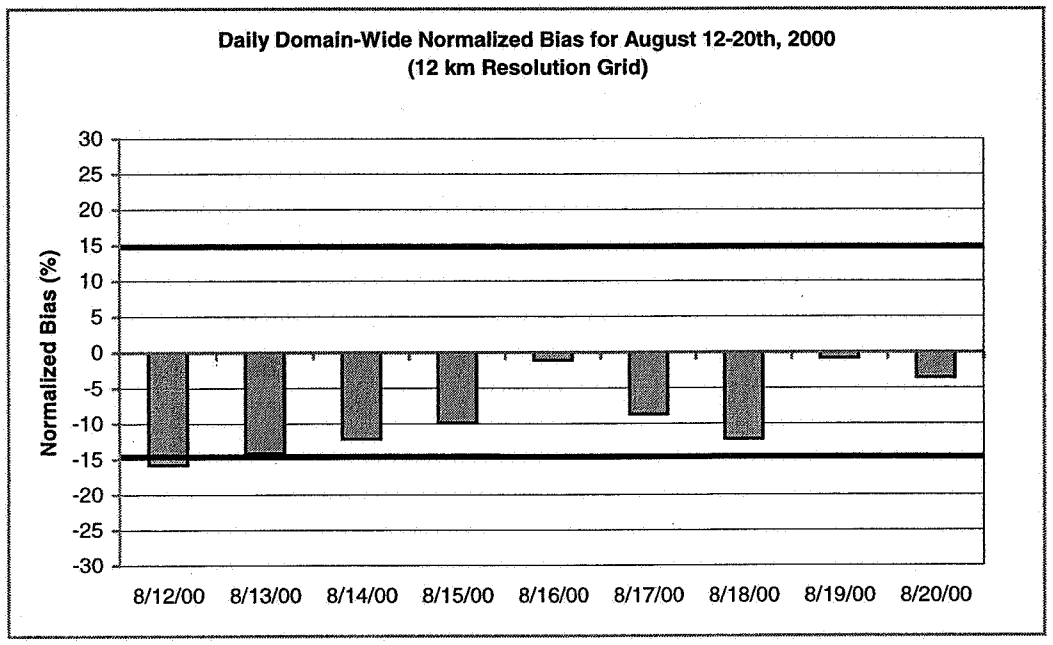
For purposes of evaluating air quality modeling for the Macon area, EPD applied a Relative Reduction Factor (RRF) analysis pursuant to EPA modeling guidance. In this analytical approach, the daily maximum 8-hour predicted value at the Macon monitor for the 2007 future control scenario was divided by the daily maximum 8-hour predicted value for 2000 (using current emissions), which results in a ratio, or "relative reduction factor."

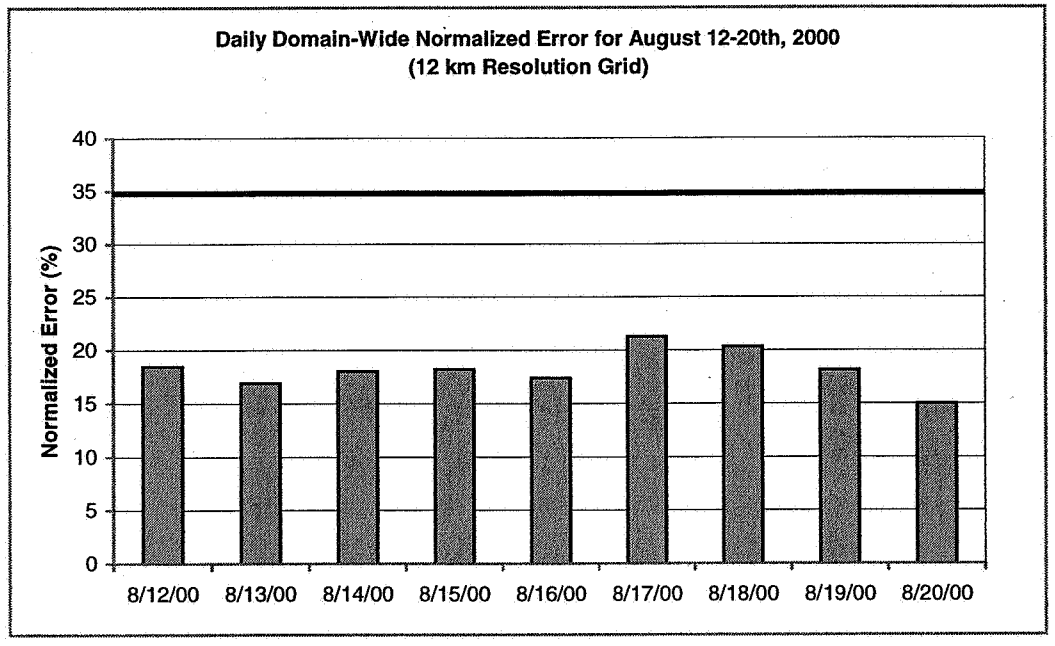
In the case of the August 12–20, 2000, episode, the maximum 8-hour predicted values produced by the model for 2000 and 2007 are 0.094 and 0.082 ppm, respectively. Taking the ratio of these two values produces a relative reduction factor of 0.878. When this RRF of 0.878 is multiplied by the observed 8-hour design value for 2001 (0.098 ppm), a future design value for 2007 of 0.086 ppm is obtained. A similar process yields a 2012 Design Value of 0.0857 ppm. While these values are slightly over the 8-hour ozone standard, the results indicate that little or no additional local controls will be needed from either Houston or Monroe Counties to bring the Macon area in attainment in 2007. The 2003 Design Value is already at 0.086 ppm, four years before the model predicts that design value, and emissions are estimated to decrease between 2003 and 2007.

Other EPA modeling studies have come to the same conclusion. The NOx SIP Call modeling shows Macon to be in attainment of the 8-Hour Ozone Standard by 2007, and the Clear Skies Modeling indicates that Macon would be in attainment of the 8-Hour Ozone Standard by 2010

with a predicted design value of 0.069 ppm even without the passage of the Clear Skies Initiative implying no need for additional controls.

The following figures and tables indicate the model performance and attainment status of monitor in Macon from EPD/FAQS modeling.





Macon 8-Hour Ozone Nonattainment Area
Attainment Demonstration Calculation Results
(12 km Grid Resolution)

Calculation of 2007 Future Design Value Using Relative Reduction Factor Method

	Macon EPD Monitor Location
2001 Observed Design Value (ppm) at Monitor	0.098
2000 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.094
2007 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.082
Relative Reduction Factor	0.878
2007 Future Design Value (ppm)	**0.086**

Calculation of 2012 Future Design Value Using Relative Reduction Factor Method

	Macon EPD Monitor Location
2001 Observed Design Value (ppm) at Monitor	0.098
2000 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.094
2007 Average Maximum Model Predicted 8-Hour Ozone Concentration (ppm)	0.082
Relative Reduction Factor	0.874
2012 Future Design Value (ppm)	**0.086**